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FEDERAL COMMUNICATIONS COMMISSION
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Before the
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Amendment of Parts 2 and 25 of the	)	
Commission's Rules to Permit Operation	)	ET Docket No. 98-206
of NGSO FSS Systems Co-Frequency with	)	RM-9147
GSO and Terrestrial Systems in the Ku-Band;	)	RM-9245
	)	
Amendment of the Commission's Rules to	)	
Authorize Subsidiary Terrestrial Use of the	)	
12.2-12.7 GHz Band by Direct Broadcast	)	
Satellite Licensees and Their Affiliates;	)	
	)	
Applications of Broadwave, USA,	)	
PDC Broadband Corporation, and	)	
Satellite Receivers, Ltd. to Provide	)	
A Fixed Service in the 12.2-12.7 GHz Band	)	

COMMENTS OF SKYBRIDGE

SKYBRIDGE L.L.C.

Phillip L. Spector
Jeffrey H. Olson
Diane C. Gaylor
Paul, Weiss, Rifkind, Wharton & Garrison
1615 L Street, N.W., Suite 1300
Washington, D.C. 20036
Telephone: (202) 223-7300
Facsimile: (202) 223-7420

Its Attorneys

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SUMMARY

The regulatory scheme proposed in the Further Notice of Proposed Rulemaking ("Further Notice"), with respect to co-frequency sharing in the 12.2-12.7 GHz band between NGSO FSS systems and Multichannel Video Distribution and Data Service ("MVDDS") systems, is grossly discriminatory against NGSO FSS systems. The Further Notice accepts practically every unsupported and contradictory assertion proffered by MVDDS proponents, while ignoring the clearly documented and critical needs of NGSO FSS systems. Without any credible technical support in the record, the Further Notice proposes "sharing" rules for ostensibly co-primary services that, in reality, would not permit even remotely equitable sharing among those services.

Despite a clear lack of consensus regarding the ability of MVDDS operations to share spectrum with primary users of the band, the Commission adopted an allocation for MVDDS in the 12.2-12.7 GHz band in the Report & Order released in conjunction with the Further Notice. According to the Commission's allocation, MVDDS systems would operate on a co-primary basis with respect to NGSO FSS systems, and on a secondary basis with respect to DBS systems.

Notwithstanding numerous unanswered technical concerns relating to the Northpoint proposal, SkyBridge has previously submitted a detailed regulatory framework under which it believes that its NGSO system and the Northpoint system could operate on a co-frequency basis. The Further Notice does not even address the most critical aspects of SkyBridge's proposal, proposing instead a simplistic "sharing" regime that utterly ignores the protection requirements of co-primary NGSO FSS user terminals. Indeed, the Further

Notice's proposals are so weighted in favor of MVDDS against NGSO FSS that this adoption would result in the equivalent of de facto secondary status for NGSO FSS systems.

Despite the Commission's statements to the contrary, rules designed for the protection of DBS systems will not inherently serve to protect NGSO FSS systems, whose user terminals tend to point toward MVDDS transmitters. Of the Commission's proposed rules, only a single limit on MVDDS operations provides some (grossly inadequate) protection to NGSO FSS user terminals -- the limit on MVDDS transmitter power -- and even that limit: (1) is subject to glaring exceptions that leave vast areas in which no constraint whatsoever is placed on the size of the zone within which NGSO FSS systems will receive interference; (2) fails to bound that zone, in view of the influence of other key parameters on the size of the zone; and (3) does nothing at all to protect consumer NGSO FSS terminals inside the zone. Moreover, this limit was not even based on the protection requirements of NGSO FSS systems, but simply represents the typical power proposed by one MVDDS applicant.

Under the rules proposed in the Further Notice, NGSO FSS receivers near the transmitter would receive unacceptable interference, and it would be left to the NGSO FSS operators to deal with the consequences. This interference scenario is simply unacceptable for two co-primary services, and is in marked contrast to the Commission's regulation of NGSO FSS and GSO BSS in the very same band, as well as in other bands:

- NGSO FSS was allocated on a co-primary basis in the 12.2-12.7 GHz band only after years of exhaustive studies, negotiations, and eventual agreement on detailed sharing rules with co-primary DBS operators. The sharing rules adopted by the Commission impose strict limitations on NGSO FSS emissions, based on the stated requirements of existing and future DBS systems, and are subject to essentially no exceptions. If sharing is to succeed, the Commission must address the NGSO

FSS/MVDDS sharing issues with the same level of discipline with which it has undertaken the NGSO FSS/DBS studies.

- Under the Further Notice proposals, GSO BSS systems would receive far greater protection from *co-primary* NGSO FSS systems than from *secondary* MVDDS systems. The limits that apply to NGSO FSS systems for the protection of DBS systems are far more comprehensive, and subject to far more rigorous demonstrations of compliance, that those proposed by the Commission for protection of DBS systems by MVDDS systems.

- In the very same Report & Order in which it made the MVDDS allocation, the Commission concluded that NGSO FSS gateways should not be permitted in the 17.3-17.7 GHz bands because of the threat of harm to a future DBS consumers. However, operations of MVDDS facilities in the band will pose a vastly greater constraint on deployment of NGSO FSS consumer equipment than that which would be posed by NGSO FSS gateways on DBS consumer equipment in the 17.3-17.7 GHz band.

In short, the Further Notice proposals are based on false assumptions, are fraught with glaring regulatory inconsistencies, and, at bottom, are flatly unworkable if the Commission truly desires the development of NGSO FSS systems. There is simply no rational basis for adopting these proposals. On the other hand, based on exhaustive study of Northpoint filings in this docket and numerous meetings with Northpoint representatives, the SkyBridge proposal takes into account the requirements of both MVDDS and NGSO FSS systems, and equitably spreads the sharing burdens between them, without imposing unnecessary or debilitating burdens on either party.

First, Northpoint has argued that NGSO FSS operators themselves should take steps to prevent interference to NGSO FSS user terminals in the "Red Zone" (that area in which the interference from the MVDDS transmitter is too high to permit co-frequency operation of the NGSO FSS system), in particular, by using "frequency diversity." This technique assumes that each affected NGSO FSS user terminal in the Red Zone has the

ability to employ a different band, in this case the 11.7-12.2 GHz band adjacent to the band shared by NGSO FSS and MVDDS systems.

Although the Commission appears to take it for granted in the Further Notice that NGSO FSS systems will implement frequency diversity to avoid MVDDS interference in the Red Zone, the Commission essentially ignored SkyBridge's proposals that would make this possible. As SkyBridge has explained previously, *even in cases where NGSO FSS systems have the capability to implement frequency diversity to avoid interference from MVDDS systems, strict limits are still necessary on MVDDS emissions in order for NGSO FSS systems to successfully employ this capability* for its user terminals in the Red Zone. Specifically:

- It must be ensured that over most of the MVDDS service area, the interference levels generated into NGSO FSS receivers across the 12.2-12.7 GHz band are low, so that the number of NGSO FSS user terminals located in the Red Zone is limited.
- In the areas in which this is not possible, it is still necessary to ensure that the NGSO FSS user terminal radio layer will not be saturated.
- Finally, it must be ensured that interference received in the adjacent 11.7-12.2 GHz band from MVDDS systems operating in the 12.2-12.7 GHz band is sufficiently low so that NGSO FSS carriers in the 11.7-12.2 GHz band may operate unconstrained by MVDDS interference.

SkyBridge has proposed simple rules to meet these goals, which, based on Northpoint's own analysis, would impose little burden on Northpoint-type systems. At the same time, these rules would allow NGSO FSS designers to design and build their systems with a degree of certainty as to the interference environment that will be created by MVDDS systems.

Second, the Commission's rules for the protection of MVDDS receivers from NGSO FSS satellite emissions must avoid unnecessary burdens on NGSO FSS systems. Northpoint seeks an additional 10 dB of protection at low elevation angles, as compared to the internationally-agreed limits for terrestrial services in this band. However, as explained in these comments, a restriction at low elevation angles directly affects the level of power that can be transmitted at higher elevation angles, thus imposing significant constraints on NGSO FSS systems.

Notwithstanding the fact that no rigorous analysis has ever been provided supporting the need to tighten the PFD limits for the protection of Northpoint, SkyBridge has proposed a regulatory solution that would protect MVDDS receivers to the level desired by Northpoint, where they actually exist and actually require additional protection, but would not constrain NGSO FSS operation where there is no such need.

In sum, the rules proposed by SkyBridge will adequately protect both services, without imposing unnecessary or debilitating burdens on either service. Moreover, they can be implemented and enforced through a simple regulatory scheme. SkyBridge therefore urges the Commission to adopt these rules.

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A Fixed Service in the 12.2-12.7 GHz Band	)	

To: The Commission

COMMENTS OF SKYBRIDGE

SkyBridge L.L.C. ("SkyBridge"), by its attorneys, hereby files its comments in response to the Commission's Further Notice of Proposed Rulemaking in the above-captioned proceeding.[1/]

I. INTRODUCTION

The proposals set out in the Further Notice, ostensibly to permit co-frequency sharing in the 12.2-12.7 GHz band between, inter alia, non-geostationary satellite orbit ("NGSO") Fixed-Satellite Service ("FSS") systems and recently-defined Multichannel Video

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1/ First Report and Order and Further Notice of Proposed Rulemaking, FCC 00-418, released December 8, 2000. Herein, the Further Notice of Proposed Rulemaking will be denoted "Further Notice" or "FNPRM." The First Report & Order will be denoted "Report & Order" or "R&O."

Distribution and Data Service ("MVDDS") systems, are inexplicable. In reality, they have little to do with frequency sharing, because they do not require MVDDS systems to facilitate coexistence with NGSO FSS systems. Instead, the proposed rules would: (1) accept at face value various undocumented and contradictory assertions made by the lead MVDDS proponent regarding the needs of its system; and (2) ignore critical and well-documented technical concerns raised by NGSO FSS proponents. In so doing, the rules would place a totally arbitrary and unnecessary burden on NGSO FSS systems. The proposed rules are transparently discriminatory and bereft of either technical support or an articulated policy rationale.

As described below, despite a clear lack of consensus regarding the ability of MVDDS operations to share spectrum with primary users of the band, the Commission adopted an allocation for MVDDS in the 12.2-12.7 GHz band in the Report & Order released in conjunction with the Further Notice. According to the Commission's allocation, MVDDS systems would operate on a co-primary basis with respect to NGSO FSS systems. SkyBridge believes that the Commission's MVDDS allocation at this juncture presents serious practical problems that have yet to be adequately addressed by the Commission. SkyBridge will therefore be filing a petition urging the Commission to reconsider the MVDDS allocation, until such time as these serious sharing issues are resolved.

The 12.2-12.7 GHz band is currently used in the U.S. by the geostationary satellite orbit ("GSO") Broadcasting Satellite-Service ("BSS") (also referred to as Direct Broadcast Service ("DBS")), and to a very limited extent by the terrestrial Fixed Service

("FS").[2/] SkyBridge and other NGSO FSS proponents have previously reached agreement with DBS providers on detailed rules to facilitate NGSO FSS sharing with current and future DBS systems. The Commission adopted these rules in the Report & Order. SkyBridge has also helped develop the rules -- contained in Article S21 of the ITU Radio Regulations -- that have been adopted internationally for protection of FS systems from NGSO FSS satellite emissions in the band.

Northpoint Technology, Ltd. ("Northpoint") has raised an additional sharing scenario with respect to the 12.2-12.7 GHz band, which involves the interaction among its proposed MVDDS terrestrial system and NGSO FSS and DBS systems.[3/] As the Commission recognized in the Report & Order and the Further Notice, the Northpoint proposal presents complex sharing issues, particularly with respect to NGSO FSS systems.[4/] The Northpoint MVDDS system is designed to transmit into only the sidelobes and backlobes of GSO DBS receivers, which tend to point towards the south in the United

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[2/] In the U.S., the 12.2-12.7 GHz band has long been cleared of most terrestrial operations to facilitate introduction of DBS services. The Commission's decision to permit MVDDS operations in the band reverses this policy.

[3/] On January 8, 1999, Northpoint affiliates filed 69 applications to provide terrestrial services in the 12.2-12.7 GHz band (the "Broadwave Applications"). Since the filing of the Broadwave Applications, similar applications have been filed by two other parties: PDC Broadband Corporation (filed April 18, 2000), and Satellite Receivers, Ltd. (filed August 23, 2000). It should be noted that none of these applications have been accepted for filing by the Commission.

[4/] R&O, ¶ 224; FNPRM, ¶ 279. Although it is clear from the record in this proceeding that serious issues remain with respect to DBS/MVDDS sharing in this band, SkyBridge confines its comments to those unresolved problems related to NGSO FSS/MVDDS sharing.

States. NGSO FSS earth stations, on the other hand, point in all directions other than the GSO arc, including in the direction of the MVDDS transmitters. The MVDDS systems are not designed to prevent interference into NGSO FSS user terminals, and no MVDDS applicant has proposed any interference mitigation techniques that MVDDS operators could employ to facilitate sharing with NGSO FSS systems.

As the Commission is aware, SkyBridge has endeavored over more than three years to determine whether, and, if so, how, its NGSO FSS system might coexist in the 12.2-12.7 GHz band with the MVDDS system proposed by Northpoint. Notwithstanding extensive technical discussions, neither SkyBridge nor the DBS operators have succeeded in developing sharing agreements with Northpoint.[5/]

Nevertheless, SkyBridge has done its best to move the proceeding forward, including submitting a detailed outline of a regulatory framework under which it believes that its NGSO system and the Northpoint system could operate on a co-frequency basis, based on its understanding of the Northpoint system and the overall interference environment in the band (the "SkyBridge Proposal").[6/] As discussed below, the Commission erroneously and inexplicably ignored the most critical elements of the

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[5/] The Commission is well aware that SkyBridge has expended considerable resources in attempting to solve this problem, just as it has with respect to solving interference concerns vis-a-vis the GSO BSS, GSO FSS and FS, among other services. These latter efforts successfully culminated in the detailed sharing regime adopted in June 2000 at the World Radiocommunication Conference ("WRC-2000") and in November 2000 by the Commission.

[6/] See *Ex Parte* Communication of SkyBridge, ET Docket 98-206, July 10, 2000 (the "SkyBridge Proposal").

SkyBridge Proposal,[7] opting instead to propose a "sharing" regime that, in reality, would not facilitate sharing among NGSO and MVDDS systems, but instead would place the NGSO FSS service in a de facto secondary status vis-a-vis MVDDS.

II. THE COMMISSION'S PROPOSALS FOR SHARING BETWEEN NGSO FSS AND MVDDS SYSTEMS ARE BASED ON FUNDAMENTAL MISUNDERSTANDINGS, AND ARE INCONSISTENT WITH COMMISSION PRECEDENT.

A. The Commission's Implications That There Exists An International Consensus On Technical Sharing Issues Related To Northpoint's Proposal Are Flatly Erroneous.

The Commission states that "[a]fter an exhaustive analysis *and the time-consuming development on the international front of a consensus regarding critical technical issues*, we have made a major threshold determination to authorize a new service, MVDDS . . ." (emphasis added).[8] However, the consensus on sharing in the 12.2-12.7 GHz band to which the Commission refers involved sharing between *only* co-primary NGSO FSS and GSO BSS operations.[9] The exhaustive discussions that lead to this consensus, and the

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[7] The Further Notice suggests that SkyBridge's proposal is not "practical," but does not explain why this is so. As discussed in greater detail infra, the SkyBridge Proposal is a simplified version of other rules adopted in the Report & Order to govern, e.g., NGSO FSS/DBS sharing in the same band. Moreover, SkyBridge's proposal has the signal virtue of being effective in permitting equitable sharing without the placing of undue burdens on either party, as opposed to the patently ineffective regime proposed in the Further Notice.

[8] R&O, ¶ 18. See also R&O ¶ 165 and Report to Congressional Committees Pursuant to the Rural Local Broadcast Signal Act, FCC 00-454, rel. January 2, 2001 ("Report to Congressional Committees"), ¶ 8.

[9] The agreements also took into account existing, point-to-point terrestrial FS (continued...)

particular agreements reached, did not involve, and did not take into account, MVDDS-type operations.[10/] As SkyBridge has previously noted, Northpoint's efforts in the ITU working groups have been meager at best, and *no conclusions whatsoever* have been reached in the international forums regarding the complex issues raised by NGSO FSS/MVDDS or GSO BSS/MVDDS sharing.[11/] The Commission's implications to the contrary are inexplicable

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9/ (...continued)
operations in the subject band. However, Northpoint repeatedly argues, and the Commission apparently agrees, that the international technical consensus relating to existing terrestrial services should not apply to MVDDS. See R&O, ¶ 279, and Section III.A.2 below. This, of course, completely undermines what is apparently the Commission's sole justification for a co-primary MVDDS allocation in the band (there is no reason provided in the Report & Order, but the Commission places the new MVDDS service within the Part 101 Fixed Microwave Service, along with other FS services). If the parameters of MVDDS are so different from traditional FS that different rules should apply, the co-primary allocation cannot be founded on the existing co-primary FS allocation in the band.

10/ "MVDDS" operations are not defined in the ITU arena, and could fall into the category of either FS or Broadcasting Service ("BS"), each of which has its own operating and performance standards. However, Northpoint specifies different standards for its system than those that have been developed for either of these services, in terms of operating parameters, performance objectives, and protection requirements, thus creating a realm of ambiguities that has hindered the ability of operators of co-frequency services to perform rigorous sharing studies.

11/ The only contributions submitted on behalf of Northpoint during the 4-year ITU-R studies related to NGSO FSS sharing with various services were treated as "Information Papers," and were submitted to the June 1998 JTG 4-9-11 meeting held in Toulouse, France, and the January 1999 JTG 4-9-11/WP 9A meeting held in Long Beach, California. In both cases, the paper was presented and discussed as part of the NGSO FSS/FS sharing discussions. However, participants in these meetings pointed out serious technical inconsistencies in Northpoint's application of certain ITU-R methodologies that Northpoint claimed to be employing. As a result, the data contained in the
(continued...)

and troubling. The international agreements finalized at WRC-2000 lend no support to the Commission's action on MVDDS in the Report & Order. Indeed, as discussed further below, the pronounced lack of consensus on important sharing issues highlights the entirely arbitrary and technically unsupportable nature of the Commission's proposed rules.

B. The Commission's Proposed Rules For MVDDS/NGSO FSS Sharing Are Arbitrary And Discriminatory.

1. The Commission's Proposals Utterly Ignore The Protection Requirements Of Co-Primary NGSO FSS User Terminals.

Use of co-primary allocations is an important mechanism for achieving efficient use of spectrum in appropriate cases. However, a co-primary allocation to two or more services has meaning only when the allocation is supported by sharing rules that ensure that the band can, in actual practice, be equitably shared by those services. To meet this goal, the Commission generally must adopt rules requiring each of the co-primary services to operate within certain boundaries, to guarantee that the co-primary allocation

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11/ (...continued)
papers were never incorporated in any output of the meetings or discussed in any Chairman's Report, and no further inputs were ever provided to any other of the relevant ITU working groups. Despite the questions raised in these meetings, which were never answered by Northpoint, the Long Beach Information Paper has since formed the basis of the technical showing made by Northpoint in the Commission's proceedings related to MVDDS services. See, e.g., Comments of Northpoint Technology, Ltd., ET Docket 98-206, RM-9147, RM-9245, March 2, 1999 ("Northpoint NPRM Comments"), Technical Annex at 20 (referring to ITU-R document USRCG9A-Int-1, the Northpoint document presented at the Long Beach JTG). In sum, there has been absolutely no technical consensus related to Northpoint's proposals within the ITU-R study groups.

permits the effective operation of both services, no matter which systems deploy first.[12/] The limitations imposed must be carefully crafted to afford the necessary protection to each of the services, while at the same time avoiding unnecessary or debilitating burdens on either service. The rules proposed by the Commission in the Further Notice are grossly inadequate to achieve this critical goal; indeed they all but guarantee an opposite result.

As the Commission acknowledges, surrounding each MVDDS transmitter there will be a zone in which satellite system receivers will receive high interference from the MVDDS transmitter.[13/] Because the NGSO FSS consumer terminals will be deployed ubiquitously, at homes and offices, the constraints imposed on NGSO FSS operators, absent adequate limitations on MVDDS operation, will be tremendous. The Commission's proposed sharing rules utterly fail to address this problem, and place the resulting burden exclusively -- an inexplicably -- on NGSO FSS systems.[14/]

12/ Particularly in the case of ubiquitous services, such as NGSO FSS and MVDDS, if the limits on each service are insufficient to adequately protect the other service, no equitable sharing will result. Rather, the first to deploy in each geographic area will heavily constrain, and may exclude, operations of the other service. Such a result is entirely inconsistent with the co-primary allocation, and contrary to the Commission's treatment of other co-primary allocations, such as, for example, the Commission's rules for NGSO/GSO sharing.

13/ R&O, ¶ 225.

14/ As a terrestrial service, MVDDS may be in a position to deploy more rapidly, particularly in urban areas. In the absence of adequate limitations on MVDDS emissions, NGSO FSS operators would be faced with accepting the entire sharing burden, and deployment of consumer-oriented services would suffer.

Note that the potentially more rapid deployment of terrestrial systems does not mean that such services are better suited for rapid introduction of new

(continued...)

In this case, the problem could be solved with strict limitations on MVDDS emissions. However, of the Commission's proposed rules, only a single limit on MVDDS operations provides some protection to NGSO FSS user terminals -- the limit on MVDDS transmitter power -- and even that limit (12.5 dBm) is subject to glaring exceptions. Even when applicable, this limit does not bound the zone within which NGSO FSS systems will receive interference, because the size, shape, and location of this zone will still vary as a function of the antenna height, tilt angle, antenna pattern, etc. And the limit does nothing at all to protect consumer NGSO FSS terminals inside the zone. Moreover, the proposed exceptions to the rule, most importantly that it apply only in urban areas,[15/] leave vast areas in which no constraint whatsoever is placed on the size of the zone.

Furthermore, the Commission's proposed limit was not even based on the protection requirements of NGSO FSS systems. The Commission appears to have proposed the 12.5 dBm value solely on the basis that "Northpoint demonstrated that it could provide service . . . using an e.i.r.p. of 12.5 dBm at its test sites in Virginia and Washington, D.C."[16/] However, with regard to ensuring that both MVDDS and NGSO FSS systems

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[14/] (...continued)
services. While terrestrial operators can very quickly deploy in certain areas, blanket deployment over the United States by these systems is economically infeasible. While some satellite systems may take longer to deploy, due to the need to construct and launch constellations of satellites, once deployed they can serve essentially any customer in all geographic areas. Rural America in particular will see broadband service delivered via satellite far sooner than it will see such service delivered terrestrially.

[15/] FNPRM, ¶ 311.

[16/] FNPRM, ¶ 311.

realistically can coexist, the 12.5 dBm power limit on MVDDS systems is utterly irrelevant, without any technical foundation whatsoever.

Indeed, the Commission concedes that it is relying "upon the ability of NGSO FSS user terminals to work around static sources of interference in any environment in which they may be placed."[17/] However, the abilities of NGSO FSS systems to handle such interference are finite.[18/] The Commission cannot absolve itself of its responsibility to suitably regulate co-frequency co-primary services with vague and unproven assurances about the abilities of the systems to adapt to the new environment, particularly when the record squarely contradicts the Commission's assumptions. Put another way, critical technical judgements cannot be grounded on an unsubstantiated hope that things will work out on their own, particularly where, as here, the technical evidence in the record refutes the likelihood that the Commission's hope can be realized.

In sum, the Commission has proposed *no* measures appropriately designed to protect NGSO FSS user terminals operating co-frequency with MVDDS systems on a co-primary basis. As a consequence, under the rules proposed in the Further Notice, NGSO FSS receivers near the transmitter would receive unacceptable interference, and it would be

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17/ FNPRM, ¶ 281.

18/ SkyBridge has described in detail the constraints imposed by NGSO FSS systems by the various Northpoint proposals in numerous filings with the Commission. See, e.g., *Ex Parte* Communication of SkyBridge L.L.C., ET Docket No. 98-206, RM-9147, and RM-9245, November 10, 1999, at 4-12; *Ex Parte* Communication of SkyBridge L.L.C., ET Docket No. 98-206, RM-9147, and RM-9245, February 18, 2000, at 20-37. See also Sections III.A.1 and III.A.2 below.

left to the NGSO FSS operators to deal with the consequences. As discussed below, use of mitigation techniques by NGSO FSS systems, such as frequency diversity, are not possible in the absence of strict limitations on MVDDS emissions. Other measures to prevent harmful interference to NGSO FSS consumer equipment from MVDDS systems, even where possible, are not likely to be palatable to consumers under the rules proposed in the Further Notice. NGSO FSS licensees would have to operate with zones, spaced every 10 miles in the case of Northpoint,[19/] in which commercial service may be seriously harmed, if not rendered impossible.

2. The Commission's Proposals Are Wholly Inconsistent With Its Treatment Of Other Services In This And Other Bands.

The interference scenario described above is simply unacceptable for two co-primary services, and is in marked contrast to the Commission's regulation of NGSO FSS and GSO BSS in the very same band, as well as in other bands.

a. The Commission's proposals are inconsistent with its treatment of NGSO FSS vis-a-vis GSO BSS in the 12.2-12.7 GHz band.

NGSO FSS and GSO BSS systems are co-primary in the 12.2-12.7 GHz band. However, NGSO FSS was allocated on a co-primary basis in the band only following years of exhaustive studies, negotiations, and eventual agreement on detailed sharing rules with co-primary BSS operators. The sharing rules adopted by the Commission impose strict

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19/ This is for Northpoint's "typical" case; in some cases, the zones could be spaced as closely as 1 kilometer apart. Letter from Bob Combs of Northpoint, to Jim Chadwick of MITRE, filed in ET Docket No. 98-206, January 31, 2001 ("First Northpoint Response to MITRE Questions"), at 2.

limitations on NGSO FSS emissions, and are subject to essentially no exceptions.[20] Moreover, unlike with the 12.5 dBm MVDDS transmitter limit proposed by the Commission, these limits are expressed in terms of equivalent power flux-density ("EPFD") in order to ensure that they limit both: (1) the power at the *input* of the affected receivers (as opposed to the *output* of the interfering transmitter); and (2) the *aggregate* interference generated by all sources of emissions from an NGSO system (e.g., all beams of all 80 satellites in the case of the SkyBridge system).

While characterizing NGSO FSS/MVDDS sharing as "complex",[21] and acknowledging that the "sharing arrangement will require careful planning and

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[20] These Commission regulations include: (1) "validation limits," based on the stated protection requirements of DBS systems, which consist of masks bounding the statistical interference from each NGSO FSS system into GSO earth station and satellite antennas of various sizes, even in worst-case, unlikely configurations; (2) a software tool for computing the worst-case interference from a system to assess compliance with the validation limits, which obligates NGSO FSS operators to provide extensive input data prior to deployment; (3) the so-called "operational limits," which place a higher constraint than the validation limits on the maximum power that can be generated into operating GSO earth stations of nearly any size; (4) "additional operational limits" that place an even higher constraint than the validation limits on the interference statistics that can be generated into operating GSO earth stations of specified sizes; (5) requirements that NGSO FSS operators demonstrate compliance, via simulation before commencing operation, with the operational and additional operational limits; and (6) limits on the aggregate interference that can be generated from all of the operating NGSO FSS systems in a given band. In addition, with the support of the U.S. delegations to various ITU-R working group meetings, international Recommendations are being developed for measuring power levels from NGSO FSS systems to check compliance with the operational limits, and to simulate NGSO FSS operations to aid administrations in assessing compliance with the additional operational limits.

[21] FNPRM, ¶ 279.

engineering,"[22] the Further Notice proposes an irrational, simplistic and patently unworkable solution. The Commission proposes to limit only MVDDS transmit power (and only in some cases) in the interest of "simplifying coordination."[23] While simplification is a worthy goal, it is more important that the sharing rules actually allow equitable sharing.

As the Commission well knows, equitably resolving complex sharing issues requires detailed sharing studies and strict limitations on both sharing services; in order to avoid imposing unacceptable burdens on one service. In the Report & Order, the Commission adopted constraints on NGSO FSS systems for the protection of GSO BSS systems that took over three years to develop, a total of nearly 100 pages to explain, and over 22 pages of new rules to administer. While not wishing to repeat this process with respect to MVDDS, SkyBridge would hope that the Commission would address the NGSO FSS/MVDDS sharing issues with the same level of discipline with which it has undertaken, e.g., the NGSO FSS/GSO BSS studies. It should be noted that the Commission casually dismissed the SkyBridge Proposal as not "practical."[24] Yet SkyBridge proposed are limits similar in concept -- although vastly simpler -- to those imposed on NGSO FSS systems for the protection of GSO BSS in the same band.

Moreover, the limits on NGSO FSS systems adopted by the Commission to protect GSO BSS systems were based explicitly on the protection requirements of existing and future GSO BSS systems in the band. The Commission made it clear that development

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[22] R&O, ¶ 224.

[23] FNPRM, ¶ 311.

[24] FNPRM, ¶ 280.

of a sharing agreement that would provide adequate protection to GSO BSS systems would be a strict condition precedent to any allocation to NGSO FSS in the band. In contrast, the MVDDS power limit proposed by the Commission is not based on the protection criteria of any NGSO FSS system. Given the above history, it is inexplicable that the Commission would now permit terrestrial MVDDS operations to enter the band without any requirement that co-primary NGSO FSS proponents be adequately protected from MVDDS emissions. This is particularly the case because the Commission *is* proposing rules designed to adequately protect MVDDS terminals from NGSO FSS satellite emissions, *according to standards based entirely on the undocumented protection requirements claimed by only one MVDDS applicant*.

b. The Commission's proposals for protection of DBS from secondary MVDDS are inconsistent with its rules for protection of DBS from co-primary NGSO FSS in the very same band.

The irrationality of the Further Notice's proposal for NGSO/MVDDS "sharing" is illustrated by the fact that, under that proposal, GSO BSS systems would receive far greater protection from *co-primary* NGSO FSS systems than from *secondary* MVDDS systems. As noted above, NGSO FSS systems are subject to exhaustive rules designed to ensure that present *and future* GSO BSS systems are adequately protected in accordance with protection criteria specified by the GSO BSS operators themselves. However, although MVDDS systems are secondary to GSO BSS systems, the Commission has proposed rules that far from guarantee protection of DBS receivers commensurate with their status.

For example, under the Commission's proposals, MVDDS operators would apparently have no obligation to protect: (1) existing DBS subscribers located outside a "mitigation zone," the boundaries of which are yet to be decided;[25/] (2) any new DBS subscribers that enter the zone after the deployment of the MVDDS system;[26/] or (3) any existing subscribers within the zone after the expiry of an 18-month period.[27/] In such cases, the only obligation of the MVDDS operator toward the DBS customer would be to provide technical information and advice.[28/]

Moreover, while the NGSO FSS licensee must make exhaustive showings demonstrating compliance with the limits protecting DBS systems, the Commission is proposing that MVDDS licensees merely certify to the Commission and DBS providers that their systems have been designed to avoid impermissible levels of interference.[29/] It is entirely unclear why the Commission "believes that these procedures would provide ample opportunity for DBS operators to determine the potential impact on their subscribers and to ensure that any potential interference situation is adequately addressed by the MVDDS

[25/] FNPRM, ¶ 269.

[26/] FNPRM, ¶ 274.

[27/] FNPRM, ¶ 274.

[28/] FNPRM, ¶ 274.

[29/] FNPRM, ¶ 273.

operator," but the Commission finds such procedures totally insufficient to ensure NGSO FSS compliance with the limits applied to that service.[30/]

In addition, although the Commission proposes to follow the approach defined in Recommendation ITU-R BO.1444, which was developed for ensuring protection of DBS receivers from NGSO FSS interference, the Commission proposes to apply the Recommendation in a far less rigorous manner with regard to MVDDS systems than it does with respect to NGSO FSS systems.[31/] Components of the analysis that the Commission considered critical in the NGSO FSS sharing studies are entirely missing in the Commission's discussion of MVDDS. For example, no analysis whatsoever has been performed on how the interference from several MVDDS transmitters in one network (or from several networks, if more than one can be deployed) aggregates. Furthermore, no solution has been proposed by MVDDS applicants to mitigate interference into GSO receivers (or NGSO FSS receivers) in those "exceptional" cases requiring special

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[30/] Compare FNPRM, ¶ 273 with R&O, ¶ 191.

[31/] FNPRM, ¶ ¶ 268-270. Northpoint also cites this Recommendation, but employs only one prong of the two-prong test contained in the Recommendation for defining acceptable levels of interference into GSO BSS systems. In brief, ITU-R Recommendation BO.1444 recommends that the aggregate interference into a GSO BSS network from NGSO FSS systems should: (1) be responsible for at most 10% of the time allowance(s) for unavailability of the given C/N value(s) as specified in the performance objectives of the desired network; *and* (2) not lead to loss of video picture continuity in the desired GSO BSS signal under clear sky conditions. Northpoint claims the "loss of picture" test is "most relevant," and ignores other critical aspects of the methodologies that have been used to govern NGSO FSS/DBS sharing. First Northpoint Response to MITRE Questions, at 6.